

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Page 1 of 3

Chemical Name: Ethylene glycol Developed by: Chris J. SkalskiCAS # 107-21-1 Data Retrieval Date: 6-09-98Internal Code # --- Fact Sheet Preparation Date: 3-01-06ACUTE DATA

<u>SPECIES</u>	<u>EC₅₀/LC₅₀</u> <u>(μg/l)</u>	<u>TEST TYPE^a</u>	<u>DURATION</u> <u>(HOURS)</u>	<u>SMAV^b</u> <u>(mg/l)</u>	<u>GMAV^b</u> <u>(μg/l)</u>	<u>REFERENCE</u> <u>NUMBER</u>
Cladoceran	>10,000,000	S,U	48	48,663,021	48,663,021	1
<i>Daphnia magna</i>	41,100,000	S,U	48			2
	41,100,000 ^c	S,U	48			3
	45,500,000	S,U	48			2
	47,400,000	S,U	48			2
	47,400,000 ^c	S,U	48			3
	51,000,000	S,U	48			2
	51,000,000	S,U	48			2
	51,000,000 ^c	S,U	48			3
	57,600,000	S,U	48			2
Cladoceran	6,900,000	S,U	48	17,920,916	17,920,916	2
<i>Ceriodaphnia dubia</i>	10,500,000	S,U	48			2
	13,140,000 ^d	S,U	48			4
	13,900,000	S,U	48			2
	22,600,000	S,U	48			2
	25,500,000	S,U	48			2
	29,700,000	S,U	48			2
	34,440,000	S,U	48			4
Fathead Minnow	8,050,000 ^d	S,U	96	57,307,174	57,307,174	4
<i>Pimephales promelas</i>	>10,000,000	S,U	96			1
	49,000,000	S,U	96			6
	53,000,000	S,U	96			6
	57,000,000	S,U	96			6
	72,860,000	S,U	96			4
Rainbow Trout	41,000,000	S,U	96	25,612,497	25,612,497	5
<i>Oncorhynchus mykiss</i>	16,000,000	S,U	96			5
Bluegill	>100,000,000	S,U	96	>100,000,000	>100,000,000	5
<i>Lepomis macrochirus</i>						

^a S = static; U = unmeasured.^b SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.^c Duplicate data not used to calculate the SMAV.^d Formulation data not used to determine the SMAV.CHRONIC DATA

<u>SPECIES</u>	<u>CHRONIC VALUE</u> <u>(μg/l)</u>	<u>METHOD</u>	<u>SMCV^a</u> <u>(μg/l)</u>	<u>GMCV^a</u> <u>(μg/l)</u>	<u>REFERENCE</u> <u>NUMBER</u>
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None Available

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Page 2 of 3

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^a SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.

REFERENCES

1. Conway, R.A., G.T. Waggy, M.H. Spiegel and R.L. Berglund. 1983. Environmental Fate and Effects of Ethylene Oxide. Environ. Sci. And Technol. 17(2):107-112.
2. Cowgill, U.M., I.T. Takahashi and S.L. Applegath. 1985. A Comparison of the Effect of Four Benchmark Chemicals on *Daphnia magna* and *Ceriodaphnia dubia* affinis Tested at Two Different Temperatures. Environ. Toxicol. Chem. 4(3):415-422.
3. Gersich, F.M., F.A. Blanchard, S.L. Applegath and C.N. Park. 1986. The Precision of Daphnid (*Daphnia magna* Straus, 1820) Static Acute Toxicity Tests. Arch. Environ. Contam. Toxicol. 15(6):741-749.
4. Pillard, D.A. 1995. Comparative Toxicity of Formulated Glycol Deicers and Pure Ethylene and Propylene Glycol to *Ceriodaphnia dubia* and *Pimephales promelas*. Environ. Toxicol. Chem. 14(2):311-315.
5. Mayer, F.L. Jr. and M.R. Ellersieck. 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Fish and Wildlife Service, U.S.D.I., Resource Publication 160, Washington, D.C.
6. Mayes, M.A., H.C. Alexander and D.C. Dill. 1983. A Study to Assess the Influence of Age on the Response of Fathead Minnows in Static Acute Toxicity Tests. Bull. Environ. Contam. Toxicol. 31(2):139-147.

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Page 3 of 3

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CALCULATION OF ACUTE AQUATIC VALUE (AAV)^a

<u>Data Requirement</u> <u>OAC 3745-1-36(A)(1)</u>	<u>SPECIES</u>	<u>GMAV</u> <u>(µg/l)</u>
(a)	Rainbow Trout	25,612,497
(b)	Bluegill	>100,000,000
(c)	Fathead Minnow	57,307,174
(d)	<i>Ceriodaphnia dubia</i>	17,920,916

Secondary Acute Factor (SAF) = 7.0

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
 = 17,920,916 ÷ 7.0
 = 2,560,131 = 2,600 mg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
 = 2,560,131 ÷ 2
 = 1,280,065 = 1,300 mg/l

CALCULATION OF CHRONIC AQUATIC VALUE (CAV)^a

Experimentally determined Acute-Chronic Ratios (ACRs):

<u>SPECIES</u>	<u>ACUTE VALUE</u> <u>(µg/l)</u>	<u>CHRONIC VALUE</u> <u>(µg/l)</u>	<u>ACUTE-CHRONIC</u> <u>RATIO</u>	<u>SPECIES MEAN</u> <u>ACR</u>
None Available				

Secondary Acute-Chronic Ratio (SACR) = $\sqrt[3]{(18)(18)(18)} = 18$

Chronic Aquatic Value (CAV) = SAV ÷ SACR
 = 2,560,131 ÷ 18
 = 142,229 = 140 mg/l

^aSee Ohio Administrative Code 3745-1-36 effective February 22, 2002.